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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,818	02/27/2004	Prabha Ibrahim	039363-1202	5635

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FOLEY & LARDNER LLP
P.O. BOX 80278
SAN DIEGO, CA 92138-0278

EXAMINER	
NASHED, NASHAAT T	
ART UNIT	PAPER NUMBER
1656	

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,818	IBRAHIM ET AL.	
	Examiner	Art Unit	
	Nashaat T. Nashed, Ph. D.	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-98* is/are pending in the application.

4a) Of the above claim(s) *17-54,56-65 and 88-91* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,55,66-87 and 92-98* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/27/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-16, 55, 66-87, and 92-98, drawn to a method of identifying compounds that binds to PYK2, classified in class 702, subclass 27.

II. Claims 17-35, drawn to Crystal of PYK2 and method of making the crystal, classified in class 435, subclass 194.

III. Claims 36-40, drawn to a homology modeling method using the structure of PYK2, classified in class 702, subclass 27.

IV. Claims 41-54, 64, and 65, drawn to electronic model of PYK2. Classification is unknown because the claims are directed to non-statutory subject matter.

V. Claims 56-63, drawn to a method of modulating PYK2 activity, classified in class 435, subclass 194.

VI. Claims 88-91, drawn to a modified compound of formula I, classified in class 548, subclass 255+.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are not disclosed as capable of use together. While the method utilizes a co-crystal, it does not utilize the crystal of invention II, which is not a co-crystal.

Inventions III and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are independent methods having different steps.

Inventions IV and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case, the electronic model can be utilized in different methods such homology modeling or identifying mutants of PYK2.

Inventions V and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs,

modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are independent methods having different steps.

Inventions VI and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the compound of invention VI can be identified by screening methods.

Inventions II and those of inventions III-VI are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are: (a) the homology modeling method of invention IV and the method of modulating PYK2 do not utilize the crystal of invention II; (b) the electronic model of invention IV is not disclosed be used with the crystal; and (c) the crystal of invention II are not disclosed as usable with the compounds of invention VI.

Inventions III and IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case, the electronic model can be utilized in different methods such homology modeling or identifying mutants of PYK2.

Inventions III and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are independent methods having different steps and products.

Inventions III and VI are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the modeling method of invention III does not utilize the modified compound of invention VI.

Inventions IV and V are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the two inventions are independent methods having different steps and product.

Inventions IV and VI are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs,

modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the electronic model is not disclosed as capable of use with the compounds of inventions VI.

Inventions V and VI are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case, the method of modulating the activity of PYK2 can be carried out with other known kinase inhibitors.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Stephen Reiter on May 30, 2006 a provisional election was made with traverse to prosecute the invention of I, claims 1-16, 55, 66-87, and 92-98. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-54, 56-63, and 88-91 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The disclosure is objected to because of the following informalities:

(a) The illustration at page 98, and Tables 3 and 4 should be presented as Figures. See 37 CFR 1.58. Also, Table 4 is of low quality and too small, and the examiner could not see what is intended to be shown. Applicant must convert the illustration and Tables into Figures 2, 3, and 4 and amend the specification to include Figure description.

(b) The protein tyrosine kinase substrate designated as biotin-$(E4Y)_3$ at page 105, paragraph 391, line 5 is not defined. The examiner assumes that biotin-$(E4Y)_3$ is biotin-Glu-Glu-Glu-Glu-Tyr-Glu-Glu-Glu-Glu-Tyr-Glu-Glu-Glu-Glu-Tyr. If the assumption is correct, the peptide is a fifteen amino acid peptide, and represents the disclosure of an amino acid sequence, which must be included in the sequence listing and identified in the specification by a sequence identification number.

(c) In Table 5, the parameters in the two equations are not defined as well as parameters in the top raw of the Table. For example, while V_{max} has a well-established meaning in the art, i.e., Kcat [E] where [E] is the enzyme

concentration, Vmax (SE) is not. Also, K, K(SE), K(lo 95%), and K(up 95%) are undefined without an established definition for them in the prior art.

(d) The Table at page 101, unit cell dimension, there is a square, which should the Greek letter "β".

(e) U. S. Patent "8,837,815" at page 5, paragraph 19, has not been issued yet. Appropriate correction is required.

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s). Table 4 comprises the disclosure of 14 amino acid sequences, which are not identified with a sequence identification numbers. The phrase "biotin-$(E4Y)_3$" at page 105, paragraph 391, line 5 is assumed to be biotin-Glu-Glu-Glu-Glu-Tyr-Glu-Glu-Glu-Glu-Tyr-Glu-Glu-Glu-Glu-Tyr, which is an amino acid sequence of fifteen amino acid sequence and should be identified with a sequence identification number and included in the paper copy and the computer readable form of the sequence listing. Application attention, in particular, is directed to 37 CFR 1.821, which states:

> (d) Where the description or claims of a patent application discuss a sequence that is set forth in the "Sequence Listing" in accordance with paragraph (c) of this section, reference must be made to the sequence by use of the sequence identifier, preceded by "SEQ ID NO:" in the text of the description or claims, even if the sequence is also embedded in the text of the description or claims of the patent application.

Thus, each time the application or the claim cite a specific amino/nucleic acid sequence, which is disclosed in the sequence listing, it should accompanied with a sequence identification number. For example, a sequence identification number should be inserted after the parentheses in paragraph 366, line 1. Also, the disclosure of the atomic coordinates of an amino acid sequence represent an amino acid sequence and therefore, a sequence identification number should be in the heading of the Table or its description. Applicants are required to identify all instances of non-compliance with 37 CFR 1,821 and perfect their compliance. Perfecting the compliance with the sequence rules is required.

> The following is a quotation of the first paragraph of 35 U.S.C. 112:
> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16, 55, 66-72, 78-87 and 92-98 are directed to a method utilizing a co-crystal with any chemical entity or any crystal structure obtained from all possible crystals of any protein named PYK2, and its fragments and mutants from any biological

source in identifying compounds that bind and inhibit any activity of PYK2. The specification, however, only provides the description of the polypeptide of, SEQ ID NO: 1 (see page 100) that produces a monoclinic crystal in space group $P2_1$, with cell unit dimension of a = 37, b = 46.97, c = 80.36, and β = 92.83 degrees, see paragraph 373. Also, the specification teach a crystal of PYK2 bound to the well known kinase inhibitor AMPPNP which appears to be identical to the above mentioned crystal with unit cell dimension within experimental errors, but there is no description of the method of obtaining the co-crystal. There is no disclosure of any particular relationship between the amino acid sequences of SYK2 proteins the crystallization conditions as well as the structure of the inhibitors and the polypeptide and the crystallization conditions.

The court of Appeals for the Federal Circuit has held that a "written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula [or] name chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." UC California v. Eli Lilly (43 USPQ2d 1398). For claims drawn to genus, MPEP section 2163 states the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or physical and/or chemical properties, by functional characteristics coupled with known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. Also, MPEP section 2163 states that a representative number of species mean that the species, which are adequately described, are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. At the time of invention, the full-length human SYK2 was well known in the art and its biological functions, which includes regulating potassium. The instant application describes the crystallization the kinase domain of residues 420-691 (SEQ ID NO: 1) of the full-length PYK2. In general, for a species of crystal to be adequately and structurally described, the following must be adequately described: (i) the exact chemical composition of the crystal, i.e., the structure feature of all molecules in the crystal including the amino acid sequence of any protein or nucleic acid, (ii) the space group of the crystal; and (iii) the unit cell dimension of the crystal. Neither the applicants nor the prior art has described a crystal or the crystallization of the full-length PYK2 with or without a ligand. Thus, the specification fails to describe additional representative species of these crystals by any identifying structural characteristics or properties other than the crystal containing the amino acid sequence of SEQ ID NO: 1 having the cell dimension of a = 37, b = 46.97, c = 80.36, and β = 92.83 degrees, for which no predictability of structure is apparent or any other atomic coordinates of any other protein. Given this lack of additional representative species as encompassed by the claims, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

Claims 1-16, 55, 66-72, 78-87 and 92-98 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not enable any person skilled in the art to make and use the invention commensurate in scope with these claims. The claims are broader than the enablement provided by the disclosure with regard to all-possible methods utilizing any co-crystal of or the atomic coordinates describing the three-dimensional structure of any fragment, variants or the full-length of PYK2 from any biological source. Factors to be considered in determining whether undue experimentation is required are summarized *In re* Wands [858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)]. The Wands factors are: (a) the quantity of experimentation necessary, (b) the amount of direction or guidance presented, (c) the presence or absence of working example, (d) the nature of the invention, (e) the state of the prior art, (f) the relative skill of those in the art, (g) the predictability or unpredictability of the art, and (h) the breadth of the claim.

The nature and breadth of the claimed invention encompasses any possible co-crystals comprising any fragment, motif, variants or the full-length of the amino acid PYK2 from any biological source (claims 1-6). Claims 8-16, 55, 66-72, 78-87, and 92-98 are directed to method of identifying compounds and any "biological agent" that bind to SYK2 using any structural coordinates for a fragment and/or mutants or the full-length of any PYK2. The specification provides guidance and examples in the form of an assay to obtain the protein of SEQ ID NO: 1, obtain crystal consisting of said protein under specific crystallization conditions, and determine the three-dimensional structure of the polypeptide of SEQ ID NO: 1 (see examples 1-4). While molecular biological techniques and genetic manipulation to make any protein, a general crystallization methods for proteins, and synthetic method to make any compound that binds to PYK2 are known in the prior art and the skill of the artisan are well developed, knowledge regarding crystallization of a particular protein and its complexes is lacking. It is well established in the art that obtaining a protein and its complexes in a crystal form is highly unpredictable without any clear expectation of success, and any change in a given crystallization condition including any minor alteration could alter the crystal form and its diffraction characteristics or even lack of crystal formation. It is now evident that protein crystallization is the major hurdle in protein structure determination. For this reason, protein crystallization has become a research subject in and of itself, and is not simply an extension of structure biologist or crystallographer's laboratory. There are many references that describe the difficulties associated with protein crystals. See for example, Gilliland *et* al, (*Curr. Open in Struct. Biol.* 1996, 6, 595-603) in particular page 600, left column second paragraph; Ke *et al.* (Methods, 2004, 34, 408-414); and Wiencek, J. M. (Ann. Rev. Biomed. Eng. 1999, 1, 505-534). Thus, the skilled artesian would be expected to screen large number of crystallization conditions, which may include screening variety of conditions in space, a micro gravity environment. A protein which may crystallize under specific crystallization condition, it mutants may or may not

crystallize under the same condition. In many cases, a protein that can't be crystallized, one of its specific mutants might be crystallized. Even if a crystal is obtained, it may or may not be suitable for structure determination by X-ray crystallography. Thus, searching for a crystallization conditions for a protein and its complexes that is suitable for X-ray crystallography and determining its three-dimensional structure by the X-ray diffraction method is well outside the realm of routine experimentation and predictability in the art of success in is extremely low. The amount of experimentation to identify a crystal for a PYK2 polypeptide or any mutant, fragment, or co-crystal thereof suitable structure determination by the X-ray crystallography method and determine the structure is enormous. Since routine experimentation in the art does not include screening large number of crystallization conditions or mutants or of SYK2 polypeptide or fragment and mutants thereof which can be crystallized where the expectation of obtaining the desired crystal is unpredictable, the Examiner finds that one skilled in the art would require additional guidance, such as information regarding the amino acid sequences of the SYK2, the chemical structure of a ligand which is binds to SYK2 and form the binary complex to be crystallized, identify a crystallization conditions that produce a crystal suitable for structure determination by X-ray crystallography and/or the atomic coordinates that define the three-dimensional structure of the PYK2 polypeptide and/or its complex with a small molecule. Without such guidance, the experimentation left to those skilled in the art is undue.

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-16, 55, 66-87, and 92-98 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following are the reasons for the rejections:

(a) Claim 1 is incomplete for omitting essential method steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: (a) co-crystallization of PYK2 of SEQ ID NO: 1 with a compound that binds to said PYK2 to obtain a monoclinic crystal in space group $P2_1$ with unit cell dimension .....; (b) determine the three dimension structure by the X-ray diffraction method; and (c) determine the special arrangement of said compound bound to the binding site of said PYK2; (d) modify the said compound; and (e) test the modified compound ability to modulate the activity of PYK2.

(b) The phrase "binds weakly" in claims 2, 16 is a relative term, which render the claim indefinite. The specification does not define the

phrase and one of ordinary skill in the art would not be able to ascertain the degree binding to call it a week binding.

(c) Claim 7 is incomplete because the formula is undefined and the claim does not end with a period.

(d) Claim 8 is incomplete for omitting essential method steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how to identify a compound that binds to PYK2.

(e) Claim 12 and 55 are incomplete for omitting essential method steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The examiner is not sure what method(s) the applicants are trying to claim. For examination purposes only, it is assumed that the claimed method is directed to any method of identifying PYK2 inhibitors.

(f) Claim 66 as a whole is incomplete, and therefore, is considered indefinite because the resulting claim does not define the metes and bound of the desired patent protection. The phrases "a biological agent", and "one sub-structure" are indefinite terms and one of ordinary skill in the art would not know the metes and bound of these terms. It is not clear to this examiner how one of ordinary skill in the art would analyze a PYK2 crystal structure to identify a biological agent, presumably, a protein, nucleic acid or antibody.

(g) Claim 78 recites the limitation "the method of claim 82 wherein said fitting", but the word fitting does not appear in claim 82, 80, or independent claim 79. There is insufficient antecedent basis for this limitation in the claim.

(h) The method of claim 92 is confusing and considered indefinite because the claim does not define the metes and bound of the desired patent protection. For examination purposes only, the method is assumed to be directed to a method of identifying compound that inhibit a protein kinase by using the atomic coordinates of the instant application to construct a homology model and use the said model to identify inhibitors.

(i) The phrase "energetically allowed sites" in claim 79 renders the claim indefinite because the resulting claim does not set forth the metes and bound of the claimed invention. There are absolute standards in the art of ascertaining the energy allowed sites from

those, which are forbidden. The phrase is a relative term and subject to interpretation of individuals and therefore, the claim is indefinite.

(j) Claims 3-6, 9-15, 67-71, 80-87, and 93-98 are included with these rejection because they are dependent on rejected claim and do not cure its deficiencies.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-16, 55, 66-87, and 92-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over the commercial availability of computers and various software packages the structure of a candidate compound to the structure a protein such as PYK2, see for example U. S. patent 6,197,495 ('495, Qiu *et al.*), in view of U. S. patents 5,837,524 ('524, Schlessinger *et al.*) and U. S. patent 6,100,254 ('254, Budde *et al.*).

The '495 patent exemplifies the state of prior art of identifying molecules that binds with a target protein based on its three-dimensional, in particular, see from column 12 line 55 through column 16, line 32. Software packages such as CHARMm, AMBER, DUCK or AUTODUCK among others are listed in columns 14 and 15 along with the commercial source.

The '495 patent teaches the human PYK2 amino and nucleic acid sequences of SEQ ID NO: 1 and 2, respectively, and method of expression the protein in host cells, see examples 5 and 6. Also, the patent teaches method of identifying compounds that binds to PYK2, see column 8, lines 4-25, and their use in treating specific diseases such as stroke, Alzheimer's and Parkinson's, other neurodegenerative diseases and migraine.

The '254 patent teaches inhibitors of protein tyrosine kinases including 3,4,5-trisubstituted 1,2,4-triazol derivatives of 1,4-benzodiazopine-2-one, see column 3-5, in particular, line 55 of column 5. The triazol derivatives of 1,4-benzodiazopine-2-one fits formula I of the instant application. Also, the '254 patent provides one of ordinary skill in the art at the time of invention to use the derivatives of 1,4-benzodiazopine-2-one as they teach good pharmacokinetic properties such as good oral availability and long circulation life time, see the last paragraph in column 2.

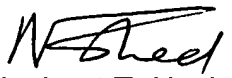
The '245 patent provides one of ordinary skill in the art with motivation to identify potential inhibitor for SYK2 as they teach that inhibitors of SYK2 can be used for the treatment of stroke, Alzheimer's and Parkinson's, other neurodegenerative diseases and migraine. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to develop a method of identifying potential inhibitors for SYK2. Thus, it would have been obvious to one of ordinary skill in the art to use a commercially available computer equipped with software packages such as DUCK, and AUTODUCK, among others taught in the '495 patent to fit a model structure of a potential inhibitor to the three-dimensional structure of SYK2 to identify possible inhibitors for SYK2 activity. The only difference between the cited prior art above and the claimed invention are the atomic coordinates in the application. Data, which are fed into known algorithm such as QUANTA whose purpose is to compare or modify those data using series of processing steps, do not impose a change in processing steps and are thus, nonfunctional descriptive material. A method used for its known purpose to compare data sets does not become nonobious merely because a new data becomes available for analysis. Nonfunctional descriptive material cannot render nonobvious an invention that has otherwise been obvious. See *In re Gulak*, 703 F2d 1381, 1385 (Fed. Cir. 1983). Atomic coordinate can't render a known method for identifying inhibitors of SYK2 of claims 8-11. The ordinary skill in the art would have the choice of many compounds known to inhibit protein kinases in general and tyrosine kinases, in particular such as those triazol derivatives of 1,4-benzodiazopine-2-one taught in the '254 patent to screen for highly selective inhibitor of SYK2 (claims 12-16, 72-79, and 92-98). It would have been further obvious to the ordinary skilled artisan to synthesize the potential inhibitor and contacting it with SYK2 to identify its specificity and selectivity for SYK2 (claim 55). Since aberrant SYK2 activity is associated with neurodegenerative diseases, one of ordinary skill in the art would have been further motivated to identify a surface loop in SYK2 or at least 6 amino acid residues on the protein surface, which can be used as an antigen and use it to raise specific antibody to use for diagnostic purposes. Thus, the ordinary the skill in the art would display the structure of the protein on a computer screen and visually identify potential antigen (claims 66, 67, 69-71). Also, algorithms to identifying mutant with altered desired characteristic are well known in the prior art (claims 68).

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nashaat T. Nashed, Ph. D. whose telephone number is 571-272-0934. The examiner can normally be reached on MTWTF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen M. Kerr can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Nashaat T. Nashed, Ph. D.
Primary Examiner
Art Unit 1656